



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,165	09/21/2001	Luis Trejo	TI-21129	4601

7590 05/01/2003

Godwin Gruber
Renaissance Tower
1201 Elm St.- Ste. 1700
Dallas, TX 75270-2084

EXAMINER

NGUYEN, DONGHAI D

ART UNIT PAPER NUMBER

3729

DATE MAILED: 05/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/961,165

Applicant(s)

TREJO, LUIS

Examiner

Donghai D. Nguyen

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-17 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the heat-affected" in line 14 and "the wire necking" in lines 14-15; and in claim 11 recites the limitation "said automatic pulse train" in lines 1-2 and "the master file" in line 3. There are insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 3729

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 and 7-11 are rejected under 35 U.S.C. 102(b) as being anticipated by US

Patent 4,390,771 to Kurtz et al

Regarding claim 1, Kurtz et al disclose a method for forming a substantially spherical free air ball on a fine non-oxidizable wire, comprising the steps of: positioning a free end of said wire (11) opposite to an EFO electrode (28), spaced apart by a gap (Figs. 4A, 4B and 5); applying a train of EFO current pulses between said electrode and said wire (col. 6, lines 63-67); controlling said pulse heights to melt a pre-determined volume of said wire while minimizing the heat-affected zone of said wire and the wire necking, thereby creating free air balls of small diameters and high ball/wire strength (col. 3, lines 41-47); controlling said pulse widths to create a substantially spherical ball shape (col. 3, lines 41-47); and automatically calculating the minimum train of consecutive EFO current pulses of various heights and widths, thereby minimizing the time needed for creating one bond and maximizing the number of bonds provided per second (col. 3, lines 47-50).

Regarding claim 2, Kurtz et al. disclose the train of pulses comprises only two or three pulses (inherence, Col. 4, lines 18-23 and lines 25-31).

Regarding claim 3, Kurtz et al disclose the wire is selected from a group consisting of gold, copper, silver, alloys thereof, plated materials, and insulated metal wires (col. 5, line 19).

Regarding claims 7 and 8, Kurtz et al disclose the train of EFO current pulses provides a continuous series of pulses of progressively lower heights, yet various pulse widths for minimizing the heat affected zone of the wire (col. 3, lines 41-47).

Art Unit: 3729

Regard to claims 9 and 10, Kurtz show the train of EFO current pulses provides a series of pulses alternating between high and low heights and various widths and the low pulse height is configured to prevent overheating of the free air ball and wire necking while maintaining the EFO arc (col. 10, line 36-48).

Regarding claim 11, an automatic pulse train calculation is provided by pre-determined empirical data stored in a master file (41) of the computerized bonder (40, inference).

6. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,523,071 to Bancroft et al.

Regarding claim 1, Bancroft et al disclose a method for forming a substantially spherical free air ball on a fine non-oxidizable wire, comprising the steps of: positioning a free end of the wire (13) opposite to an EFO electrode (22), spaced apart by a gap (Fig. 1); applying a train of EFO current pulses (29 and 59) between said electrode and said wire; controlling said pulse heights to melt a pre-determined volume of said wire while minimizing the heat-affected zone of said wire and the wire necking, thereby creating free air balls of small diameters and high ball/wire strength (col. 4, line 63 to col. 5, line 7); controlling said pulse widths to create a substantially spherical ball shape (col. 5, lines 4-7); and automatically calculating the minimum train of consecutive EFO current pulses of various heights and widths, thereby minimizing the time needed for creating one bond and maximizing the number of bonds provided per second (inference; Col. 4, lines 19-25).

In claim 2, Bancroft et al disclose the train of pulses comprises 2 or 3 pulses (Fig. 2).

Regarding claims 3 and 4 Bancroft et al disclose the wire is copper (col. 3, line 3) and having diameter about 25-75 μm (Col. 4, line 36).

Art Unit: 3729

Regarding claim 5, Bancroft et al disclose the wire melting and ball forming is performed in ambient air (col. 8, line 14).

Regarding claim 6, Bancroft et al disclose the train of EFO current pulses is further controlled to reduce size and damage in the heat-affected zone, thereby providing smooth wire loop formation (col. 4, line 59 to col. 5, line 1).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (703) 308-1789. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7307 for regular communications and (703) 305-3579 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

DN
March 20, 2003



PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700